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PTO/SB/21 (09-04);

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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/709,940 7026234	
	Filing Date	06/08/2004	
	First Named Inventor	Jui-Meng Jao	
	Art Unit	2891	
	Examiner Name	Anya, Igwe U	
Total Number of Pages in This Submission	8	Attorney Docket Number	NAUP0480USA

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
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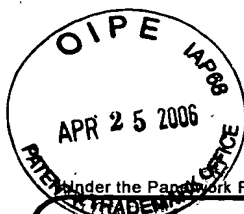
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Firm Name	North America Intellectual Property Corporation		
Signature	<i>Winston Hsu</i>		
Printed name	Winston Hsu		
Date	APR 24 2006	Reg. No.	41,526

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PTO/SB/17 (12-04v2)

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FEE TRANSMITTAL

For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27TOTAL AMOUNT OF PAYMENT (\$)**0.00****Complete if Known**

Application Number	10/709,940
Filing Date	06/08/2004
First Named Inventor	Jui-Meng Jao
Examiner Name	Anya, Igwe U
Art Unit	2891
Attorney Docket No.	NAUP0480USA

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____☒ Deposit Account Deposit Account Number: **50-3105** Deposit Account Name: **North America Intellectual Property Corporation**

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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
		<u>Small Entity</u> Fee (\$)		<u>Small Entity</u> Fee (\$)		<u>Small Entity</u> Fee (\$)	
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description		Fee (\$)	<u>Small Entity</u> Fee (\$)
Each claim over 20 (including Reissues)		50	25
Each independent claim over 3 (including Reissues)		200	100
Multiple dependent claims		360	180
Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____ - 20 or HP = _____ x _____ = _____			
HP = highest number of total claims paid for, if greater than 20.			
Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
_____ - 3 or HP = _____ x _____ = _____			
HP = highest number of independent claims paid for, if greater than 3.			

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

<u>Total Sheets</u>	<u>Extra Sheets</u>	<u>Number of each additional 50 or fraction thereof</u>	Fee (\$)	Fee Paid (\$)
_____ - 100 = _____	_____ / 50	_____ (round up to a whole number)	x _____ = _____	

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): _____

Fees Paid (\$)**SUBMITTED BY**

Signature	<i>Winston Hsu</i>	Registration No. (Attorney/Agent)	41,526	Telephone	3027291562
Name (Print/Type)	Winston Hsu	Date	APR 24 2006		

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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MAY 01 2006



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No. : 7,026,234 B2 Issue Date : Apr. 11, 2006
Serial No. : 10/709,940 Filing Date : Jun. 8, 2004
Inventor : Jui-Meng Jao et al.
Docket No. : NAUP0480USA

Title: PARASITIC CAPACITANCE-PREVENTING DUMMY SOLDER BUMP
STRUCTURE AND METHOD OF MAKING THE SAME

To: Commissioner for Patents
P.O. BOX 1450
Alexandria, VA 22313-1450

Subject: Request for Certificate of Correction of Office Mistake

The above-identified patent was issued on 04/11/2006. The applicant found out that the Foreign Application Priority Data was missed on the front page of the patent (Attachment 1). Documents on record indicate this as an Office mistake of consequence.

The applicant submitted priority document and claimed for foreign priority on 06/08/2004. The Foreign Applications data listed on the filing receipt dated 07/15/2004 (Attachment 2) and the Foreign Priority showed on the PAIR system (Attachment 3) indicate that the PTO received these documents indeed.

The applicant hereby requests that a Certificate of Correction be issued under 37 CFR 1.322 to supplement the Foreign Application Priority Data (Taiwan patent application no. 092117491 dated 06/26/2003).

MAY 01 2006

Respectfully submitted,

Winston Hsu

Date: APR 24 2006

Winston Hsu, Patent Agent No. 41,526

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MAY 01 2006



US007026234B2

(12) **United States Patent**
Jao et al.

(10) **Patent No.:** **US 7,026,234 B2**
(45) **Date of Patent:** **Apr. 11, 2006**

(54) **PARASITIC CAPACITANCE-PREVENTING
DUMMY SOLDER BUMP STRUCTURE AND
METHOD OF MAKING THE SAME**

(56) **References Cited**

(75) Inventors: **Jui-Meng Jao**, Miao-Li Hsien (TW);
Shing-Ren Sheu, Tao-Yuan (TW);
Kuo-Ming Chen, Hsin-Chu Hsien
(TW); **Hung-Min Liu**, Hsin-Chu (TW);
Kun-Chih Wang, Hsin-Chu (TW)

(73) Assignee: **United Microelectronics Corp.**,
Hsin-Chu (TW)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 57 days.

(21) Appl. No.: **10/709,940**

(22) Filed: **Jun. 8, 2004**

(65) **Prior Publication Data**

US 2004/0266160 A1 Dec. 30, 2004

(51) **Int. Cl.**
H01L 21/44 (2006.01)
H01L 29/40 (2006.01)

(52) **U.S. Cl.** **438/613; 438/612; 438/614;**
438/622; 438/623; 438/624; 438/626; 257/707;
257/737; 257/738; 257/778; 257/780; 257/758

(58) **Field of Classification Search** **438/613,**
438/614, 622, 623, 624, 626, 612; 257/758,
257/707, 737, 738, 778, 780

See application file for complete search history.

U.S. PATENT DOCUMENTS

5,220,199 A * 6/1993 Owada et al. 257/773
6,118,180 A * 9/2000 Loo et al. 257/737
6,333,557 B1 * 12/2001 Sullivan 257/758
6,551,856 B1 * 4/2003 Lee 438/108
6,759,319 B1 * 7/2004 Viswanadam et al. 438/613
6,847,066 B1 * 1/2005 Tahara et al. 257/243
6,913,946 B1 * 7/2005 Lin 438/106
2004/0178436 A1 * 9/2004 Baniecki et al. 257/310
2004/0183187 A1 * 9/2004 Yamasaki et al. 257/700

FOREIGN PATENT DOCUMENTS

JP 2003017530 A * 1/2003

* cited by examiner

Primary Examiner—B. William Baumeister

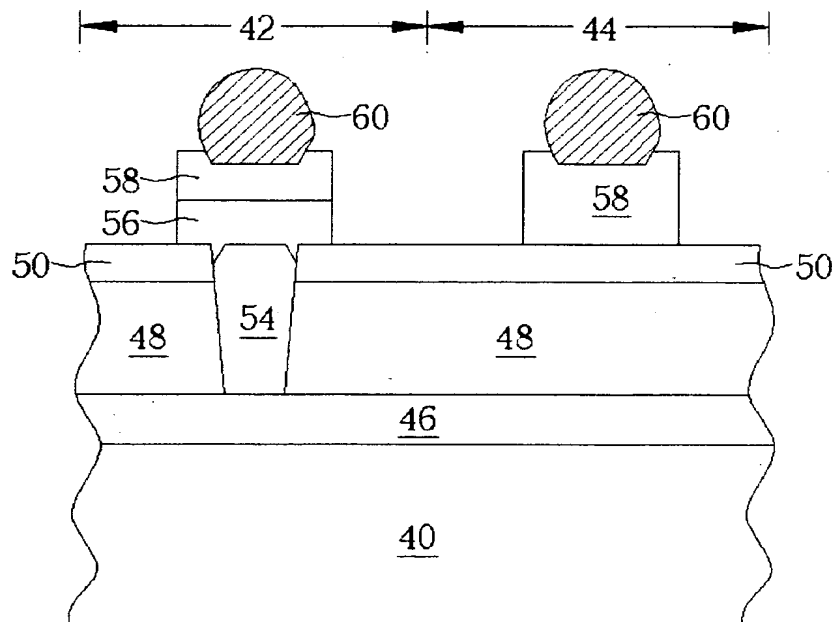
Assistant Examiner—Igwe U. Anya

(74) *Attorney, Agent, or Firm*—Winston Hsu

(57) **ABSTRACT**

A parasitic capacitance-preventing dummy solder bump structure on a substrate has at least one conductive layer formed on the substrate, a dielectric layer employed to cover the conductive layer, an under bump metallurgy layer (UBM layer) formed on the dielectric layer, and a solder bump formed on the UBM layer.

17 Claims, 9 Drawing Sheets



No Foreign
Application
Priority Data



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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/709,940	06/08/2004	2812	770	NAUP0480USA	9	17	2

CONFIRMATION NO. 3939

027765
 NAIPO (NORTH AMERICA INTERNATIONAL PATENT OFFICE)
 P.O. BOX 506
 MERRIFIELD, VA 22116

FILING RECEIPT



OC000000013237866



Date Mailed: 07/15/2004

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Jui-Meng Jao, Miao- Li Hsien, TAIWAN;
 Shing-Ren Sheu, Tao-Yuan City, TAIWAN;
 Kuo-Ming Chen, Hsin-Chu Hsien, TAIWAN;
 Hung-Min Liu, Hsin-Chu City, TAIWAN;
 Kun-Chih Wang, Hsin-Chu City, TAIWAN;

Domestic Priority data as claimed by applicant

Foreign Applications

TAIWAN 092117491 06/26/2003

If Required, Foreign Filing License Granted: 07/14/2004

Projected Publication Date: 12/30/2004

Non-Publication Request: No

Early Publication Request: No

Title

PARASITIC CAPACITANCE-PREVENTING DUMMY SOLDER BUMP STRUCTURE AND

METHOD OF MAKING THE SAME

Preliminary Class

438

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Title 37, Code of Federal Regulations, 5.11 & 5.15**

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Printer Friendly

10/709,940

PARASITIC CAPACITANCE-PREVENTING DUMMY SOLDER BUMP STRUCTURE AND METHOD OF
MAKING THE SAME

Foreign Priority

Foreign Priority		
Country	Priority	Priority Date
TAIWAN	092117491	06-26-2003

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